

Q²

Q3

14. (Amended) Use of a composition as defined [in any one of claims in claim 36 for transfecting a eukaryotic or prokaryotic cell in vivo or in vitro with an anionic macromolecule.

15. (Amended) Use of a composition as defined [in any one of claims in claim 36 for transfecting a eukaryotic or prokaryotic cell in vivo or in vitro polynucleotide.

Q4

20. (Amended) Use of a compound as defined [in any one of claims 1-claim 1] for introducing in vivo or in vitro a biologically active molecule into

Q5

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27 ~~28.~~

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~~29~~ The compounds of claim 2 wherein R³ is Gln-Gln-Arg-Lys-Arg-Lys-Ile-Trp-Ser-Ile-Leu-Ala-Pro-Leu-Gly-Thr-Thr-Leu-Val-Lys-Leu-Val-Ala-Gly-Ile-NH-CH[CONH₂](CH₂)- with a reversed amide backbone or derivatives thereof consisting of at least 50 % D-amino acids.

~~29~~
~~30~~ The compounds of claim 3 wherein R³ is Gln-Gln-Arg-Lys-Arg-Lys-Ile-Trp-Ser-Ile-Leu-Ala-Pro-Leu-Gly-Thr-Thr-Leu-Val-Lys-Leu-Val-Ala-Gly-Ile-NH-CH[CONH₂](CH₂)- with a reversed amide backbone or derivatives thereof consisting of at least 50 % D-amino acids.

~~30~~
~~31~~ The compounds of claim 4 wherein R³ is Gln-Gln-Arg-Lys-Arg-Lys-Ile-Trp-Ser-Ile-Leu-Ala-Pro-Leu-Gly-Thr-Thr-Leu-Val-Lys-Leu-Val-Ala-Gly-Ile-NH-CH[CONH₂](CH₂)- with a reversed amide backbone or derivatives thereof consisting of at least 50 % D-amino acids.

~~31~~
~~32~~ The compounds of claim 2 wherein R³ is D-Gln-D-Gln-D-Arg-D-Lys-D-Arg-D-Lys-D-Ile-D-Trp-D-Ser-D-Ile-D-Leu-D-Ala-D-Pro-D-Leu-Gly-D-Thr-D-Thr-D-Leu-D-Val-D-Lys-D-Leu-D-Val-D-Ala-Gly-D-Ile-NH-[CONH₂]-CH-(CH₂)-.

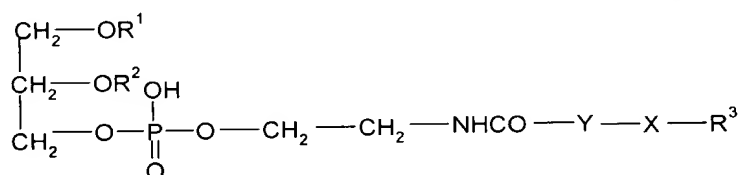
~~32~~
~~33~~ The compounds of claim 3 wherein R³ is D-Gln-D-Gln-D-Arg-D-Lys-D-Arg-D-Lys-D-Ile-D-Trp-D-Ser-D-Ile-D-Leu-D-Ala-D-Pro-D-Leu-Gly-D-Thr-D-Thr-D-Leu-D-Val-D-Lys-D-Leu-D-Val-D-Ala-Gly-D-Ile-NH-[CONH₂]-CH-(CH₂)-.

~~33~~
~~34~~ The compounds of claim 4 wherein R³ is D-Gln-D-Gln-D-Arg-D-Lys-D-Arg-D-Lys-D-Ile-D-Trp-D-Ser-D-Ile-D-Leu-D-Ala-D-Pro-D-Leu-Gly-D-Thr-D-Thr-D-Leu-D-Val-D-Lys-D-Leu-D-Val-D-Ala-Gly-D-Ile-NH-[CONH₂]-CH-(CH₂)-.

~~34~~
~~35~~ The compounds of claim 5 wherein R³ is D-Gln-D-Gln-D-Arg-D-Lys-D-Arg-D-Lys-D-Ile-D-Trp-D-Ser-D-Ile-D-Leu-D-Ala-D-Pro-D-Leu-Gly-D-Thr-D-Thr-D-Leu-D-Val-D-Lys-D-Leu-D-Val-D-Ala-Gly-D-Ile-NH-[CONH₂]-CH-(CH₂)-.

~~35~~
~~36~~ A composition comprising at least at least one compound of formula:

(I)



wherein R^1 and R^2 are a hydrocarbyl moiety of a straight-chain or branched-chain, saturated or unsaturated aliphatic carboxylic acid or a phospholipid moiety, R^3 is a basic, membrane disturbing peptide with a reversed amide backbone, Y is C_{2-10} alkylene, X is $-C(O)-NH-$ or $-S-S-$ and salts thereof and a helper lipid.

~~36~~
~~37~~ The composition of claim 36 further comprising a short chain phospholipid.

~~37~~
~~38~~ The composition of claim 37 further comprising a cationic lipid.

~~38~~
~~39~~ The composition of claim 38 further comprising an additional transfection reagent.

~~39~~
~~40~~ The composition of claim 36 further comprising a cationic lipid.

~~40~~
~~41~~ The composition of claim 36 further comprising an anionic macromolecule.

~~41~~
~~42~~ The composition of claim 41 wherein the anionic macromolecule is a polynucleotide.

~~42~~
~~43~~ The composition of claim 41 further comprising a polycationic polymer.

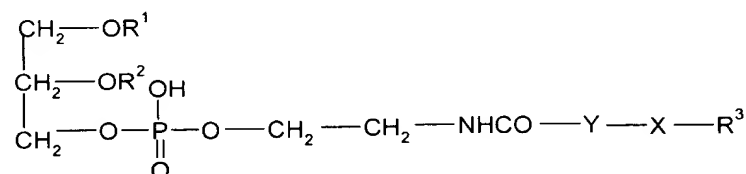
~~43~~
~~44~~ The composition of claim 43 wherein the polycationic polymer is polyethyleneimine.

~~44~~
~~45~~ The composition of claim 36 further comprising a polycationic polymer.

~~45~~
~~46~~ The composition of claim 45 wherein the polycationic polymer is polyethyleneimine.

~~46~~
~~47~~ A process for transfecting a cell in vivo or in vitro with an anionic macromolecule, comprising contacting a cell in vivo or in vitro with the anionic macromolecule in the presence of compounds of formula:

(I)

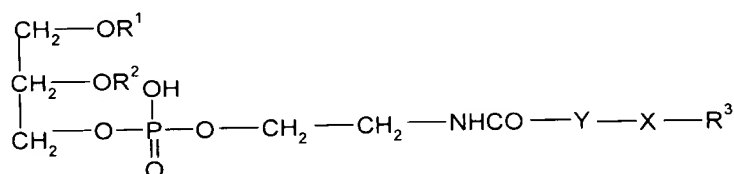


wherein R^1 and R^2 are a hydrocarbyl moiety of a straight-chain or branched-chain, saturated or unsaturated aliphatic carboxylic acid or a phospholipid moiety, R^3

is a basic, membrane disturbing peptide with a reversed amide backbone, Y is C₂₋₁₀ alkylene, X is -C(O)-NH- or -S-S- and salts thereof.

~~47~~
~~48~~ A process for transfecting a cell in vivo or in vitro with an anionic macromolecule, comprising contacting a cell in vivo or in vitro with the anionic macromolecule in the presence of a composition comprising at least one compound of formula:

(I)



wherein R¹ and R² are a hydrocarbyl moiety of a straight-chain or branched-chain, saturated or unsaturated aliphatic carboxylic acid or a phospholipid moiety, R³ is a basic, membrane disturbing peptide with a reversed amide backbone, Y is C₂₋₁₀ alkylene, X is -C(O)-NH- or -S-S- and salts thereof and a helper lipid.

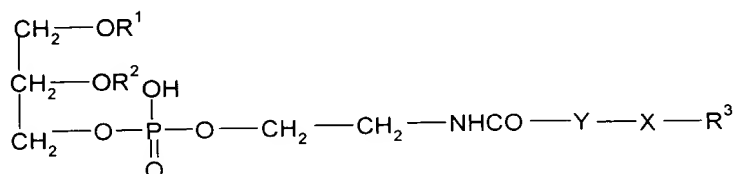
~~48~~
~~49~~ The process of claim 48, wherein the composition further comprises a short chain phospholipid.

~~49~~
~~50~~ The process of claim 49, wherein the composition further comprises a cationic lipid.

~~50~~
~~51~~ The process of claim 48, wherein the composition further comprises a cationic lipid.

~~51~~
~~52~~ A process for introducing a biologically active anionic molecule into a cell in vivo or in vitro with an anionic macromolecule, comprising contacting a cell in vivo or in vitro with the anionic macromolecule in the presence of a composition comprising at least one compound of formula:

(I)



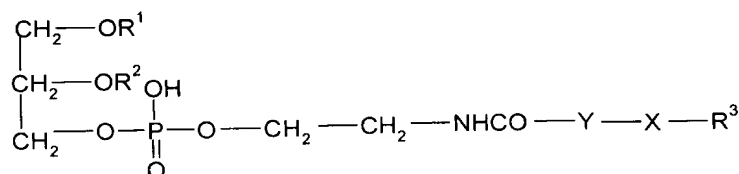
wherein R¹ and R² are a hydrocarbyl moiety of a straight-chain or branched-chain, saturated or unsaturated aliphatic carboxylic acid or a phospholipid moiety, R³ is a

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basic, membrane disturbing peptide with a reversed amide backbone, Y is C₂₋₁₀ alkylene, X is -C(O)-NH- or -S-S- and salts thereof and a helper lipid.

~~S2~~
~~S3~~ A process for introducing in vivo or in vitro a biologically active anionic molecule into a cell, comprising contacting a cell in vivo or in vitro with the anionic macromolecule in the presence of a compound of formula:

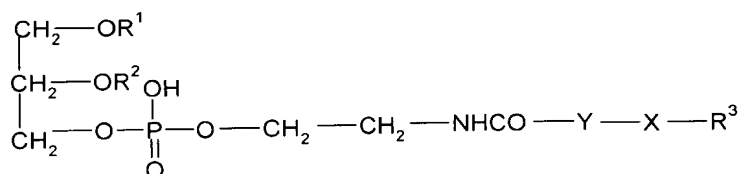
(I)



wherein R¹ and R² are a hydrocarbyl moiety of a straight-chain or branched-chain, saturated or unsaturated aliphatic carboxylic acid or a phospholipid moiety, R³ is a basic, membrane disturbing peptide with a reversed amide backbone, Y is C₂₋₁₀ alkylene, X is -C(O)-NH- or -S-S- and salts thereof.

~~S3~~
~~S4~~ A process for introducing in vivo or in vitro a biologically active anionic molecule into a cell, comprising contacting in vivo or in vitro a cell with the anionic macromolecule in the presence of a composition comprising at least one compound of formula:

(I)



wherein R¹ and R² are a hydrocarbyl moiety of a straight-chain or branched-chain, saturated or unsaturated aliphatic carboxylic acid or a phospholipid moiety, R³ is a basic, membrane disturbing peptide with a reversed amide backbone, Y is C₂₋₁₀ alkylene, X is -C(O)-NH- or -S-S- and salts thereof and a helper lipid.